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The Baseline Survey of Inland Water Systems - Key Blue Economy Intervention Areas in Kenya

Policy Brief

ACHEWS

AFRICA CENTRE FOR HEALTH ENVIRONMENT AND WATER SERVICES

-Revitalizing innovations through knowledge-

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1.0 BACKGROUND

1.1 Preamble

Kenya's vast inland water resources present significant untapped potential for sustainable economic development and growth. While much attention has been given to coastal and marine aspects of Kenya's blue economy, inland waters, including lakes, rivers, and wetlands - offer substantial opportunities to contribute to the country's economic prosperity, food security, and environmental conservation efforts. This policy brief examines the current state of Kenya's inland blue economy, identifies key challenges, and proposes strategic recommendations to harness these resources sustainably.

1.2 Introduction

Kenya's blue economy extends beyond its coastal regions to encompass a network of inland water bodies that are vital to the nation's socio-economic fabric. These inland waters, rich in biodiversity and natural resources, have the potential to significantly contribute to Kenya's Gross Domestic Product (GDP) growth, create employment opportunities, enhance food security and improve livelihoods in order to accelerate rural development. As Kenya strives to achieve its development goals and the United Nations Sustainable Development Goals (SDGs), particularly SDG 14 on "Life Below Water," through Kenya's Vision 2030, Bottom-up Economic Transformation Agenda (BETA), and The Fourth Medium Term Plan (MTP IV), it is crucial to adopt a comprehensive approach that includes both marine and inland water resources in its blue economy strategy.

2.0 Context and Objectives

2.1 Current State of Kenya's Inland Blue Economy

Kenya's inland waters support diverse economic activities such as fisheries, aquaculture, transportation, and tourism. The fisheries sector plays a crucial role in providing high-quality animal protein and supporting livelihoods for over 37 Million Kenyans. However, the full potential of these resources remains largely unrealized due to various challenges, including overfishing, pollution, climate variability, and inadequate infrastructure. This is because of the population pressure from energetic, middle-class, literate and ever-growing population.

2.2 Policy Context

The Kenyan government has recognized the importance of the blue economy in its national development agenda. In 2018, for example, Kenya hosted the Sustainable Blue Economy Conference, demonstrating its commitment to harnessing ocean and inland water resources for economic growth. The country has also developed policies and strategies aimed at promoting sustainable use of its water resources, including the National Blue Economy Strategy and Sectoral policies. However, there is a need for a more focused approach to inland waters within the broader blue economy framework.

2.3 Purpose

The survey was conducted by Africa Centre for Health, Environment and Water Services (ACHEWS) between March and July 2024 with an aim to;

- Provide insights and recommendations for strengthening Kenya's inland waters blue economy, ensuring that these vital resources contribute effectively to the country's sustainable development and inclusive growth.
- Highlight key blue economy policy interventions based on blue economy baseline survey for inland waters in Kenya, initiated and funded by the UK Government through the Foreign Commonwealth and Development Office (FCDO).

The above could be achieved because:

- Inland waters hold immense potential for Kenya's blue economy, offering opportunities for economic growth, improved livelihoods, and environmental sustainability. This sector remains largely untapped, representing a significant frontier for investment and development.
- Kenya's emerging and expanding young population (aged 18-40), which includes a high percentage of illiterate, unemployed and unskilled individuals, especially women and other vulnerable groups, often finds itself excluded from existing economic opportunities, thus limiting participation in revenue generation and the formal tax framework.
- By embracing targeted interventions, job creation, and income-generating opportunities within the inland waters' blue economy, stakeholders can unlock new avenues for inclusive growth, empowering marginalized populations while contributing to national prosperity.

Aura, M.C., Nyamweya, C., Musa, S., Ogari, Z., Owoko, W., Osore, M., May, L., Njiru, J.M. (2023). The quantification of the extent of flooding on selected major Afrotropical lakes to guide management. Frontiers in Environmental Science, Front. Environ. Sci. 11:1062289. https://doi: 10.3389/fenvs.2023.1062289.

3.0 Key Findings and Policy Directions

3.1 Rift Valley Catchment Area Water Bodies

The Rift Valley water bodies face numerous threats that impact not only the ecosystems but also local communities reliant on these resources. The following summary outlines the key findings and recommendations for each major water body within the area.

3.1.1 Lake Turkana Basin

Findings	Baseline Recommendations
1. **Fluctuating Water Levels**: Reliance on the Omo River leads to significant changes in water levels affecting ecosystems and communities. 2. **Environmental Degradation**: Human activities such as deforestation and mining threaten habitats and biodiversity. 3. **Climate Change**: Increased temperatures and altered rainfall patterns exacerbate water scarcity and agricultural challenges. 4. **Water Management**: Ineffective governance leads to unsustainable fishing practices, harming local livelihoods. 5. **Transboundary Conflicts**: Competition for resources between Kenya and Ethiopia can spark disputes. 6. **Limited Infrastructure**: Inadequate facilities hinder access to resources and services. 7. **Economic Challenges**: Many communities face poverty, limiting their ability to adapt to environmental changes. 8. **Pollution**: Inadequate waste management contributes to declining water quality.	1. Establish collaborative water management agreements between Kenya and Ethiopia. 2. Implement ecosystem restoration initiatives to mitigate habitat loss. 3. Develop climate adaptation strategies to enhance resilience in communities. 4. Improve integrated water resource management to curb unsustainable practices. 5. Foster diplomatic engagement to resolve resource competition issues. 6. Development of infrastructure at landing sites and ports to support blue economy activities and boost trade in the region. 7. Initiate poverty alleviation programs tailored to community needs. 8. Establish effective waste management systems to protect water quality

3.1.2 Turkwel River Basin

Findings	Baseline Recommendations
1. **Water Scarcity:** The Turkwel River basin faces significant water scarcity driven by various factors: a) **Arid Climate**: The naturally dry environment limits water availability. b) **Rainfall Variability**: Unpredictable rainfall patterns exacerbate water insecurity. c) **Growing Demand**: A rising population and economic activities increase pressure on limited water resources. 2. **Climate Change Impacts:** Climate change intensifies the region's challenges: a) **Drought**: Extended periods without rain have led to severe shortages. b) **River Shrinkage**: The river often appears as a dry, muddy bed. c) **Delayed Rainy Seasons**: Late long rains disrupt agriculture and water supply. 3. **Economic Vulnerability:** The local economy, heavily reliant on the river, faces risks: a) **Agriculture**: Crop production is vulnerable to climate variability. b) **Livestock**: Nomadic pastoralists depend on river water for their herds. c) **Irrigation Projects**: Initiatives like the Katilu irrigation Scheme depend on the river. 4. **Water Quality Concerns:** Water quality issues complicate the situation: a) **Pollution**: Reports of discoloured waters raise concerns. b) **Unsanitary Practices**: Poor hygiene practices threaten community health. 5. **Sustainable Resource Management:** Balancing water demand with sustainability poses challenges: a) **Over abstraction**: Upstream water extraction risks scarcity. b) **Irrigation Expansion**: Increased irrigation demands affect resilience to drought. **Socio-economic Impacts** Environmental changes threaten local livelihoods: 1. **Livelihood Threats**: Altered rainfall patterns impact regional livelihoods. 2. **Food Security**: Disruptions in agriculture and livestock threaten food security.	1. **Water Conservation Practices**: Promoting efficient water use and conservation techniques among communities to optimize the limited resources available. 2. **Rainwater Harvesting**: Encouraging the collection and storage of rainwater to mitigate the effects of unpredictable rainfall patterns. 3. **Sustainable Irrigation Methods**: Implementing advanced irrigation techniques, such as drip irrigation, to reduce water wastage and improve agricultural resilience. 4. **Pollution Control Measures**: Enforcing regulations to reduce pollution in the river and promoting community awareness on hygiene practices to improve water quality. 5. **Afforestation and Reforestation**: Initiatives aimed at restoring vegetation in the basin to enhance water retention and mitigate erosion. 6. **Climate Adaptation Strategies**: Developing plans to help communities adapt to climate change effects, such as drought and shifting rainfall patterns. 7. **Community Engagement and Education**: Involving local populations in decision-making processes and educating them on sustainable practices to ensure their livelihoods are protected. 8. **Monitoring and Research**: Establishing systems to monitor water quality and availability, and conducting research on sustainable resource management practices.

3.1.3 Lake Baringo Basin

Findings	Baseline recommendations
1. **Turbidity and Sedimentation**: High sedimentation rates due to soil erosion from human activities. 2. **Fluctuating Water Levels**: Extreme flooding has submerged villages and displaced families. 3. **Infrastructure Impact**: Flooding disrupts tourism, fishing, and local economies. 4. **Displacement**: Thousands have been forced from their homes due to flooding. 5. **Environmental Degradation**: Poor land practices are damaging the ecosystem. 6. **Biodiversity Loss**: Local wildlife populations are declining. 7. **Water Quality Issues**: Increased nutrients affect the lake's ecosystem and usability for humans. 8. **Climate Change**: Alters precipitation patterns, increasing drought and flooding. 9. **Socio-economic Challenges**: Food insecurity and poverty are rising. 10. **Governance Issues**: Conflicts hinder effective management and conservation.	1. Implement erosion control and buffer zone establishment to reduce sedimentation. 2. Enhance flood management through improved water catchment strategies. 3. Diversify livelihoods to lessen economic strain from flooding. 4. Provide support for displaced communities with housing and resources. 5. Promote sustainable agricultural practices through community education. 6. Engage local communities in biodiversity conservation initiatives. 7. Improve water quality through management techniques like wetlands. 8. Develop community awareness programs on climate adaptation.

3.1.4 Lake Nakuru Basin

Findings	Baseline recommendations
1. **Water Pollution**: Severe contamination from sewage and industrial waste. 2. **Industrial Discharge**: Factories release harmful toxins into the lake. 3. **Sewage Treatment Issues**: Ineffective waste management plants worsen pollution. 4. **Wildlife Threats**: Pollution endangers aquatic species, notably the flamingo population. 5. **Deforestation**: Urbanization leads to loss of forest cover and increased runoff. 6. **Siltation**: Activities like quarrying add sediment to the lake. 7. **Climate Change**: Rising water levels contribute to flooding. 8. **Heavy Metals Presence**: Increased contamination noted in recent studies. 9. **Tourism Decline**: Environmental degradation threatens local tourism.	1. Establish a water quality monitoring program for early detection of pollution sources. 2. Invest in cleaner industrial technologies to reduce discharge into the lake. 3. Upgrade sewage treatment facilities to prevent runoff from urban areas. 4. Support wildlife health assessments to monitor and protect species. 5. Engage in eco-tourism initiatives that promote awareness of conservation needs.

3.1.5 Lake Naivasha Basin

Findings	Baseline recommendations
1. **Water Pollution**: Contamination from various human activities affects water quality. 2. **Agricultural Runoff**: Intensive farming practices lead to nutrient pollution. 3. **Invasive Species:** The spread of invasive species, such as water hyacinth, disrupts ecological balance, outcompetes native flora, and devastates habitats critical for biodiversity. 4. **Climatic Impacts**: Rising water levels linked to increased rainfall since 2009 have flooded communities. 5. **Social Disruption**: Displacement from rising levels negatively impacts livelihoods.	1. Establish a robust monitoring system for pollution sources. 2. Improve sewage treatment infrastructure for better waste management. 3. Implement best management practices in agriculture to reduce runoff. 4. Development and adoption of an Integrated Water Resources Management Plan. 5. Conduct public awareness campaigns on pollution prevention.

3.1.6 Lake Bogoria Basin

Findings	Baseline Recommendations
1. **Rising Water Levels**: Significant flooding has submerged local land and displaced communities. 2. **Loss of Cultural Sites**: Rising waters impact indigenous cultural heritage. 3. **Infrastructure Damage**: Flooding affects roads, health, and tourism facilities. 4. **Ecological Changes**: Altered ecosystems threaten local wildlife.	1. Develop flood risk management strategies to mitigate impacts on communities. 2. Support displaced communities with housing and restoration of livelihoods.

3.1.7 Lake Elmentaita

Findings	Baseline Recommendations
1. **Pollution and Water Quality Issues**: Contaminated by wastewater and agricultural runoff. 2. **Encroachment**: Human activities threaten habitats and contribute to degradation. 3. **Rising Water Levels**: Climate change impacts alter ecosystems, forcing species migrations. 4. **Socioeconomic Challenges**: Local communities face increased poverty and reduced tourism	1. Implement strict regulations for waste management and control runoff. 2. Engage local communities in habitat restoration and conservation efforts.

3.1.8 Lake Magadi Basin

Findings	Baseline Recommendations
1. **Water Scarcity and Salinity**: High salinity limits freshwater availability. 2. **Environmental Degradation**: Human activities degrade ecosystems, affecting biodiversity. 3. **Climate Change Impacts**: Altered weather patterns create challenges for agriculture.	1. Improve irrigation practices to reduce reliance on saline water. 2. Promote sustainable land-use practices to restore ecosystems.

3.2 Athi Catchment Area

The Athi Catchment Area faces numerous environmental challenges that require urgent attention. Here's a summary of the key findings and recommended actions.

Findings	Baseline Recommendations
1. Water Pollution • Sources: Uncollected waste, sewage, industrial discharges, agrochemicals, and petrochemicals • Impact: Severe degradation of water quality and ecosystem health 2. Inadequate Sanitation Infrastructure • Lack of piped water and sewage systems, especially in outskirts of Nairobi • Contributes to pollution and poses serious health risks 3. Water Scarcity • Exacerbated by limited freshwater resources, high rainfall variability, and climate change • Forces residents to rely on unsafe water sources 4. Climate Change Impacts • Failed rains, prolonged droughts, and declining surface water resources • Worsens existing water scarcity issues 5. Rapid Population Growth and Urbanization • Increases pressure on water resources and pollution • Leads to encroachment on natural areas 6. Industrial Pollution • Significant contributor to water pollution, especially around Nairobi • Toxic effluents and chemical discharges threaten ecosystem and human health 7. Poor Solid Waste Management • Includes plastic pollution and improper waste disposal • Contributes to water body degradation 8. Health Issues • Waterborne diseases, cholera outbreaks, typhoid, and diarrhoea • Linked to pollution and lack of clean water 9. Ecosystem Degradation • Threatens aquatic life, reduces biodiversity • Degrades wetlands and riparian areas 10. Economic Impacts • Increased healthcare costs • Potential decline in agriculture and tourism	1. Improve Wastewater Management • Ensure proper wastewater treatment before discharge • Implement strict regulations for industrial discharges • Promote sustainable farming practices to minimize runoff 2. Establish Comprehensive Pollution Control Measures • Regular water quality monitoring and assessment • Partnerships among government, NGOs, and communities • Promote sustainable land and water use practices 3. Adapt to Climate Change Impacts • Implement water conservation measures (e.g., rainwater harvesting) • Develop drought-resistant crops and promote climate-smart agriculture • Invest in local water infrastructure 4. Develop Biodiversity Conservation Strategies • Protect critical habitats and restore degraded areas • Establish conservation areas and wildlife corridors • Encourage sustainable fishing practices 5. Strengthen Collaborative Governance and Stakeholder Engagement • Develop a multi-stakeholder governance framework • Facilitate regular knowledge and resource sharing 6. Invest in Research and Knowledge Sharing • Conduct comprehensive environmental assessments • Partner with academic institutions for technical expertise • Share best practices through workshops and training sessions

3.3 Ewaso Ng'iro North Catchment Area

The Ewaso Ng'iro North Catchment Area is facing numerous threats to its environmental and socio-economic well-being. These challenges include water scarcity, climate change impacts, land degradation, deforestation, biodiversity loss, population pressure, resource use conflicts, flooding, pollution, and socio-economic challenges. To combat these threats, a range of recommendations is proposed to ensure sustainable resource management, environmental restoration, and community resilience.

Findings	Baseline Recommendations
1. **Water Scarcity and Drought:** Water scarcity is a critical issue in the Ewaso Ng'iro North catchment area. The region faces recurrent droughts, which, combined with increasing water demands driven by population growth, lead to significant water insecurity. This problem is exacerbated by climate change, which has increased the frequency and severity of droughts in the area. 2. **Climate Change Impacts:** Climate change is causing severe environmental challenges in the catchment area. It has led to increased severity and frequency of both floods and droughts. These climate extremes are significantly altering weather patterns, especially rainfall, which directly affects water availability and agricultural productivity. 3. **Land Degradation and Soil Erosion:** The Upper Ewaso Ng'iro North basin experiences widespread overgrazing, soil erosion, and land degradation, particularly in the northern region. The Laikipia Plateau, a transition zone from wetter to drier highlands, faces challenges due to large-scale ranching and cultivation, contributing to land degradation. 4. **Deforestation:** Deforestation, especially in the upper catchment and overgrazed rangelands, is a significant problem. It contributes to high erosion risk and has led to a decline in water quality, impacting the availability of water resources. The loss of forest cover also affects river flow and overall ecosystem productivity. 5. **Biodiversity Loss:** The catchment area is experiencing a loss of biodiversity due to various factors including climate change, unsustainable agricultural practices, and habitat destruction. This loss threatens both wildlife and plant species in the region.	1. **Enhancing Water Management and Conflict Resolution**: Establish equitable water-sharing agreements to reduce tension and promote collaboration. Involve local stakeholders to craft a comprehensive water governance framework that considers the diverse needs of various user groups. 2. **Implementing Sustainable Agricultural Practices**: Adopt sustainable agronomic practices, including conservation agriculture and rainwater harvesting, to optimize water use. Provide training for farmers to transition to these sustainable practices while ensuring agricultural growth. 3. **Addressing Environmental Degradation**: Enforce regulations against harmful practices like illegal sand harvesting. Conduct community awareness campaigns and engage in restoration projects that focus on rehabilitating degraded lands. 4. **Developing Climate Adaptation Strategies**: Implement community-based adaptation measures and invest in infrastructure improvements to enhance resilience against climate extremes. 5. **Fostering Collaborative Governance**: Create multi-stakeholder platforms for negotiation on resource management. Capacity-building for local governance structures will aid in managing resources sustainably. 6. **Conducting Research and Monitoring Programs**: Invest in research to gain insights into evolving challenges in the catchment area. Establish baseline data to guide policy development and engage local researchers in incident response.

Findings	Baseline Recommendations
6. **Population Pressure and Unsustainable Agriculture:** The growing population in the catchment area is putting pressure on natural resources. Unsustainable agricultural practices are contributing to land degradation and water scarcity. The area is highly utilized for agricultural production, primarily small-scale farming, which can lead to overexploitation of resources. 7. **Resource Use Conflicts:** With increasing pressure on limited resources, the area faces resource use conflicts. These conflicts often arise between different user groups, such as farmers, pastoralists, and wildlife conservationists. 8. **Flooding:** Despite water scarcity being a major issue, the catchment area also experiences periodic floods. These floods can cause significant damage to infrastructure and displace communities. 9. **Pollution:** The catchment area faces pollution issues, which contribute to the degradation of water resources and overall environmental quality. This pollution likely comes from various sources including agricultural runoff and urban areas. 10. **Socio-economic Challenges:** The environmental issues in the catchment area translate into significant socio-economic challenges for local communities. These include food insecurity, poverty, and limited economic opportunities. The challenges particularly affect rural communities who struggle with access to clean water and sustainable livelihoods.	

3.4 Tana Catchment Area

Findings	Baseline Reformations
1. **Water Scarcity:** The Tana Catchment Area experiences fluctuating water availability due to inconsistent rainfall linked to climate variability, prolonged droughts, and the over-extraction of water for agricultural and domestic uses. This situation hampers agricultural productivity and compromises access to clean drinking water. 2. **Environmental Degradation:** Deforestation caused by unsustainable logging, agricultural expansion, and urbanization is a pressing concern. The loss of forest cover leads to increased soil erosion, diminished biodiversity, and disrupted hydrological cycles, further exacerbating environmental degradation. 3. **Pollution:** Agricultural runoff, laden with fertilizers and pesticides, contributes significantly to water pollution. The contamination of rivers and water bodies poses serious health risks to both human populations and aquatic ecosystems. 4. **1Climate Change Impacts:** Altering weather patterns associated with climate change, including increased temperatures and extreme weather events, significantly exacerbate challenges regarding water availability and food security. 5. **Soil Erosion and Degradation:** Poor land management practices, such as overgrazing and monoculture farming, foster soil erosion and degradation, reducing land fertility and threatening food security. 6. **Invasive Species:** The spread of invasive species, such as water hyacinth, disrupts ecological balance, outcompetes native flora, and devastates habitats critical for biodiversity. 7. **Biodiversity Loss:** Habitat destruction and fragmentation, primarily driven by agricultural and infrastructural developments, have led to a decline in various species, threatening the ecological integrity of the catchment area. 8. **Socioeconomic Challenges:** Poverty and limited access to resources hinder the capacity of local communities to engage in sustainable practices, amplifying the challenges related to environmental degradation. 9. **Conflicts Over Resources:** Intense competition for water and land resources among various user groups —farmers, pastoralists, and industrial stakeholders — fuels conflicts that complicate effective resource management. 10. **Infrastructure Deficiencies:** Inadequate infrastructure, such as poor road networks and insufficient sanitation facilities, restricts access to essential services, impacting community wellbeing. 11. **Lakes Chala and Jipe**: key issues included sedimentation, water abstraction, infrastructural problems and invasive aquatic weeds.	1. **1Establishment of Coordinating Bodies:** The formation of coordinating bodies, such as the Climate Sector Working Group (CSWG), has been initiated to oversee climate-related initiatives. This promotes collaboration among stakeholders to implement effective strategies aligned with local needs. 2. **Conducting Participatory Climate Risk Assessments:** Engaging communities in participatory climate risk assessments is essential for identifying vulnerabilities associated with climate impacts and prioritizing targeted interventions that address local needs. 3. **Developing and Implementing Climate Adaptation Plans:** The Tana River County Government is implementing climate adaptation plans through legislation that focuses on community-driven approaches and integrates climate measures into local governance frameworks. 4. **Promoting Climate-Resilient Practices:** Local governments are advocating for sustainable agricultural practices, improved water management systems, and disaster risk reduction initiatives to enhance community resilience to climate changes. 5. **Facilitating Community Engagement and Awareness:** Workshops and outreach programs are instrumental in raising public awareness about climate change and fostering inclusive decision-making processes that prioritize the voices of affected communities. 6. **Addressing Local Capacity Constraints:** To surmount challenges related to limited capacity and resources, local governments must enhance both their own and community capacities, ensuring the successful implementation of adaptation strategies.

3.5 Lake Victoria Catchment Area

Findings	Baseline Recommendations
1. **Pollution:** Lake Victoria faces significant pollution from various sources, including agricultural runoff, industrial discharges, and untreated sewage, resulting in deteriorating water quality and aquatic health. 2. **Eutrophication:** Excessive nutrient inflow from agricultural activities has led to eutrophication, characterized by harmful algal blooms that diminish oxygen levels and negatively impact aquatic biodiversity. 3. **Overfishing:** Overfishing, due to both local and commercial practices, has depleted fish stocks, jeopardizing the livelihoods of communities that depend on fishing for income and sustenance. 4. **Invasive Species:** The introduction of the Nile perch has led to the extinction of many native fish species, disrupting the ecological balance and contributing to biodiversity loss. 5. **Climate Change:** Climate change is causing temperature fluctuations and altered rainfall patterns, significantly impacting water levels and aquatic species distribution. 6. **Habitat Degradation:** Wetland loss, primarily caused by urbanization and agricultural practices, hinders the lake's ability to filter pollutants and provides essential breeding grounds for species. 7. **Water Hyacinth Invasion:** The proliferation of water hyacinth obstructs waterways, affecting navigation and fishing activities and hindering ecosystem health. 8. **3.8 Governance and Management Challenges:** Poor coordination among Kenya, Uganda, and Tanzania undermines effective governance and collaborative management efforts necessary to address the complex challenges facing the lake. 9. **Socioeconomic Challenges:** Poverty and health issues burden many communities around Lake Victoria, limiting access to resources and exacerbating water quality and public health concerns.	1. **Pollution Control Measures:** Local governments must enforce regulations to monitor and reduce pollution sources, improve infrastructure for wastewater treatment, and engage industries in pollution reduction initiatives. Effective pollution management is crucial in safeguarding the lake's ecosystem and ensuring the health of communities that depend on its resources. 2. **Eutrophication Mitigation:** Addressing eutrophication necessitates promoting integrated nutrient management practices and raising awareness among farmers about sustainable agricultural techniques. These initiatives can help to reduce nutrient runoff into the lake, thereby preserving water quality and supporting aquatic life. 3. **Sustainable Fisheries Management:** Implementing fishing quotas and promoting community-based fisheries management can help sustain fish stocks while fostering local economies through alternative livelihood opportunities, such as eco-tourism. This approach not only ensures the sustainability of fish populations but also empowers local communities economically. 4. **Invasive Species Control:** Coordination and monitoring efforts to manage invasive species should be prioritized, including research on biological control methods and community education initiatives. Effective management of invasive species is essential to protect native biodiversity and restore ecological balance in the lake. 5. **Climate Change Adaptation Strategies:** Local governments should enhance resilience by improving water management and restoring degraded ecosystems while involving communities in climate risk assessments. Such strategies can mitigate the impacts of climate change and foster adaptive responses within local populations. 6. **Habitat Restoration Efforts:** Restoration initiatives that focus on wetland areas should be prioritized to enhance natural filtration and sustain biodiversity. Healthy wetlands play a critical role in maintaining ecosystem functions and provide essential services for the surrounding communities. 7. **Water Hyacinth Management:** A combination of mechanical, biological, and chemical control methods should be applied for effective water hyacinth management, alongside community-generated initiatives that turn this invasive species into an economic resource. Engaging communities in these efforts not only aids in controlling the species but also promotes local economic development.

Findings	Baseline Recommendations
	8. **Strengthening Governance and Collaborative Management** Enhancing coordination and establishing regional agreements among riparian countries will facilitate shared responsibilities and strengthen governance structures. Collaborative management is vital for effectively addressing the challenges that span across national boundaries in the Lake Victoria region. 9. **Addressing Socioeconomic Challenges:** Supporting community development initiatives focusing on health, education, and economic opportunities can bridge the connection between poverty alleviation and environmental sustainability. By addressing these socioeconomic factors, communities can better engage in sustainable practices that support the blue economy. 10. **Enhancing Maritime Infrastructure:** Investments in maritime infrastructure are crucial for improving navigation safety and supporting the economic activities around Lake Victoria, emphasizing the need for a comprehensive transport network. Enhanced infrastructure will not only facilitate trade and tourism but also improve overall access to resources for local communities. The proposal to have a ring road around the lake should be given priority.

4.0 Conclusion and Recommendations

Establish a Comprehensive Blue Economy Framework: Develop a unified policy framework for the management and development of Kenya's inland waters. This framework should clearly define the blue economy's scope, integrate sustainable practices, and delineate the roles and responsibilities of stakeholders, including government agencies, local communities, and private sector entities.

Undertake Marine Spatial Planning for Major Lakes: This is meant to organize lake uses in order to minimize lake use conflicts, minimize risks of environmental load, solve lake scape space demand, determine the potential of lake scape firms, and determine indicators of changes in socio-ecological wellbeing of the resource base.

Strengthen Legal and Institutional Mechanisms: Reform and bolster existing legal frameworks governing water resources. This should include enhancing the Water Act and instituting regulations that address pollution control, resource allocation, and environmental protection. Clearly defining institutional responsibilities and improving coordination among relevant government bodies will streamline management and enforcement efforts.

Enhance Water Quality Management: Implement stringent protocols for water quality management to combat pollution in inland waters. This involves monitoring pollution sources, enforcing strict penalties for violations, and promoting sustainable agricultural practices that reduce runoff. Public awareness campaigns should educate communities about pollution impacts, fostering a culture of environmental stewardship.

Promote Sustainable Resource Management Practices: Develop policies that support sustainable resource harvesting and aquaculture. This includes establishing catch limits, encouraging aquaculture methods that do not harm natural ecosystems, and backing community-based fisheries management. Investing in research to identify alternative sustainable practices will also enhance resource conservation.

Community Engagement and Capacity Building: Foster community involvement in decision-making processes concerning water management. Establish and empower Water Resource Users Associations (WRUAs) to ensure local communities have a voice in resource management. Providing training and resources will enhance the management capacity of these associations, leading to more effective local governance.

Invest in Research and Infrastructure Development: Increase funding for research focused on the blue economy and related ecosystems, including studies on biodiversity, pollution impacts, and sustainable practices. Additionally, developing infrastructure for resource management, such as water treatment facilities and sustainable irrigation systems, is crucial for improving water quality and resource efficiency.

Adaptation to Climate Change: Formulate adaptation strategies that integrate climate resilience into water resource management. This should involve investing in climate-resilient infrastructure, promoting water-saving technologies, and enhancing community capacity to respond to climate variability. Programs aimed at restoring wetlands will also improve water quality and bolster natural resilience against climate impacts.

Foster Cross-Sectoral Coordination: Implement policies that encourage collaboration among sectors such as agriculture, environment, and energy. Establish inter-agency task forces or committees to facilitate dialogue and integrate planning efforts, ensuring that decisions made in one sector do not negatively impact others. This holistic approach fosters a better understanding of the interconnections between sectors and their effects on water resources.

Monitor and Evaluate Progress: Create a robust monitoring and evaluation system to assess the effectiveness of implemented blue economy policies and strategies. This system should collect data on water quality, resource usage, and levels of community participation. Regular assessments will inform future policy adjustments and ensure that objectives are being met.

Raise Public Awareness and Involvement: Conduct extensive public awareness campaigns to educate communities on the importance of inland water resources and the blue economy. Engaging citizens in conservation efforts and highlighting the socio-economic benefits of sustainable practices will cultivate a collaborative culture dedicated to preserving these vital resources.

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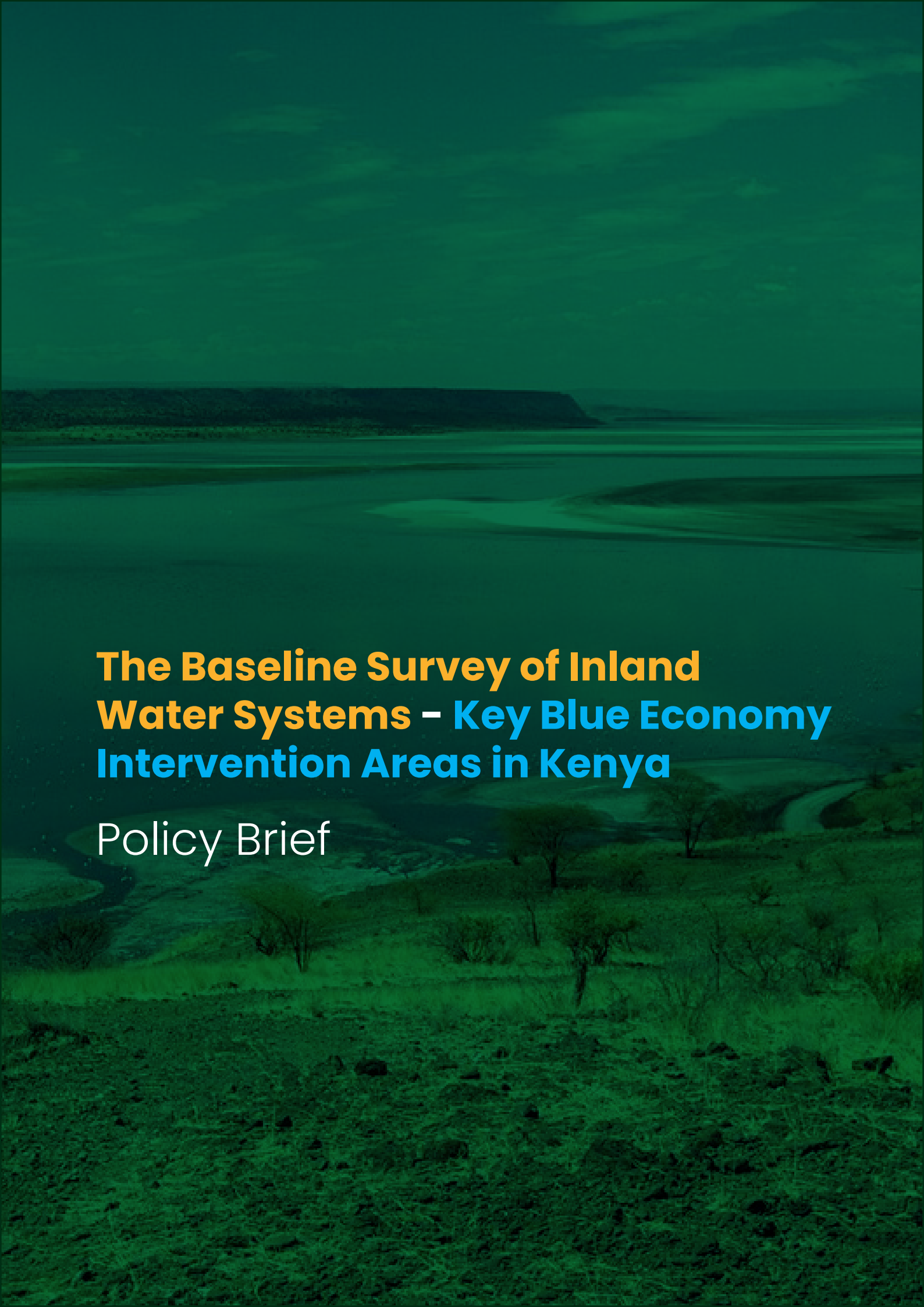
- Relevant stakeholders undertook the validation of the survey products.



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